

What Is Claimed Is:

1 1. A layer jump control apparatus for controlling a layer
2 jump process of an optical drive, wherein the layer jump process
3 comprises a kicking process, a holding process, a braking
4 process and a waiting process, the layer jump control apparatus
5 comprising:

6 a pick up head having a lens and a voice coil motor, wherein
7 the pick up head drives the voice coil motor in accordance with
8 a driving force to vertically move the lens;

9 a preamplifier for producing a focusing error signal;

10 a controller for receiving the focusing error signal and
11 producing a focusing control signal;

12 a low pass filter for receiving the focusing control signal
13 and producing a layer distance balancing signal; and

14 a driving device for outputting the driving force;

15 wherein:

16 the driving device receives the focusing control signal to
17 determine the driving force when the optical drive does not
18 perform the layer jump process;

19 the driving device receives a kicking signal and the layer
20 distance balancing signal to determine the driving force when
21 the optical drive performs the kicking process;

22 the driving device receives a braking signal and the layer
23 distance balancing signal to determine the driving force when
24 the optical drive performs the braking process; and

25 the driving device receives the layer distance balancing
26 signal to determine the driving force when the optical drive
27 performs the holding process and the waiting process.

1 2. The layer jump control apparatus according to claim 1,
2 wherein the optical drive is a DVD drive.

1 3. The layer jump control apparatus according to claim 1,
2 wherein the controller is an equalizer.

1 4. The layer jump control apparatus according to claim 1,
2 wherein the layer distance balancing signal is a direct current
3 voltage level of the focusing control signal.

1 5. An optical drive for performing a layer jump process,
2 wherein the layer jump process comprises a kicking process, a
3 holding process, a braking process and a waiting process, the
4 optical drive comprising:

5 a pick up head having a lens and a voice coil motor, wherein
6 the pick up head drives the voice coil motor in accordance with
7 a driving force to vertically move the lens;

8 a preamplifier for producing a focusing error signal;

9 a controller for receiving the focusing error signal and
10 producing a focusing control signal;

11 a low pass filter for receiving the focusing control signal
12 and producing a layer distance balancing signal; and

13 a driving device for outputting the driving force;

14 wherein:

15 the driving device receives the focusing control signal to
16 determine the driving force when the optical drive does not
17 perform the layer jump process;

18 the driving device receives a kicking signal and the layer
19 distance balancing signal to determine the driving force when
20 the optical drive performs the kicking process;

21 the driving device receives a braking signal and the layer
22 distance balancing signal to determine the driving force when
23 the optical drive performs the braking process; and
24 the driving device receives the layer distance balancing
25 signal to determine the driving force when the optical drive
26 performs the holding process and the waiting process.

1 6. The optical drive according to claim 5, wherein the
2 optical drive is a DVD drive.

1 7. The optical drive according to claim 5, wherein the
2 controller is an equalizer.

1 8. The optical drive according to claim 5, wherein the layer
2 distance balancing signal is a direct current voltage level of
3 the focusing control signal.

1 9. A method of controlling an optical drive to perform a layer
2 jump process, wherein the optical drive comprises a vertically
3 movable pick up head, a preamplifier, a controller, and a low
4 pass filter, the method comprising the steps of:

5 receiving a focusing error signal produced by the
6 preamplifier in the controller to produce a focusing control
7 signal;

8 sending the focusing control signal to the low pass filter
9 to produce a layer distance balancing signal;

10 performing a kicking process in accordance with a kicking
11 signal and the layer distance balancing signal;

12 performing a holding process in accordance with the layer
13 distance balancing signal;

14 performing a braking process in accordance with a braking
15 signal and the layer distance balancing signal; and
16 performing a waiting process in accordance with the layer
17 distance balancing signal.

1 10. The method according to claim 9, wherein the optical
2 drive is a DVD drive.

1 11. The method according to claim 9, wherein the controller
2 is an equalizer.

1 12. The method according to claim 9, wherein the layer
2 distance balancing signal is a direct current voltage level of
3 the focusing control signal.